FWT01

Multi-functional Wire Testing Instrument

User Manual

Safety Notes

⚠Warning

Read carefully this manual to avoid electric shock,

Caution: Cases which could result in instrument damage or wrong test results.

Warning: Cases or actions which could result in personal injury to the users.

⚠Warning

There is danger of electric shock, serious injury or death caused by touching electrical appliance. To avoid personal injury or death caused by electric shock, you should strictly follow this manual.

- Read all contents included in this manual
- Use this product in accordance with this manual, or else, protection function provided by this product will be out of service or weakened.
- Do not use testing line that is damaged or has bare metal.
- Do not use damaged product such as the case cracks.
- Do not use the product in electrical storm, damp or

thunderstorm environments.

- Do not use the product to test cable line that has strong current (e.g. 22V supply line)
- Do not use the product around inflammable gas, high dust or vapor environments.
- Do not connect the product to power supply with a voltage exceeding test working voltage
- Do not use the product with missing or wrongly installed battery back cover.
- Must separate testing line from the tested line before the battery aback cover is opened.
- Do not try to repair this product. User-replaceable parts are not incorporated in this product.
- For your safety, keep in mind "safety first".
- Electric shock is possibly caused if voltage exceeds 30V AC or 60V DC.
- Apply proper personal safety equipments, such as safety glasses, mask, insulation gloves, insulation shoes as well as insulation pad, etc.
- Do not make yourself grounded when working on live power lines.
- Always connect grounding line with null line when using alligator clip testing line or adapter jumper.

Overview

This product is a multi-functional handheld cable testing tool. It has wide application with reinforced cable types and multiple functions, which is a necessary testing tool for telecommunication engineering, wiring engineering and network maintenance personnel.

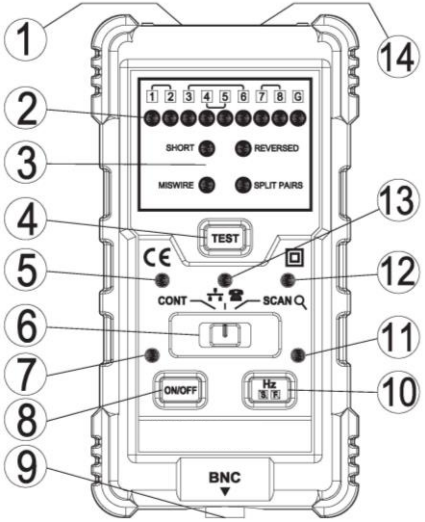
Main Functions

- Cable hunting: Directly hunt the cable with RJ11, RJ45 and BNC terminal and other metal leads through adaptor.
- When cable is hunted, there is no need to strip off cable sheath, which is easy and quick to judge the location of breakpoint in cable.
- It can directly hunt cable when weak current equipment is turned on, such as Ethernet switch, router.
- Test network cable: It can fully test the line sequence of network cable, open circuit, short-circuit, miswire, reverse connection and splitpairs.
- Test line level, positive and negative polarity.
- Test the status of telephone line: It can test the working status of telephone line (idle, ringing, and off-hook) and judge TIP or RING line.
- Check lead continuity.
- Test the connection between network cable and switch port.
- It provides low voltage prompt function and the receiver has installed spotlight.

⚠	Important safety information. Please read this manual before use. Wrong use may lead to the equipment or its components are damaged.
⏚	Grounding
⧈	Double insulation protection
CE	In compliance with EU(European Union) directives
CAT II	Measurement category II is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low voltage mains installation.
CAT III	Measurement category III is applicable to test and measuring circuits connected to the distribution part of the building ' s low voltage mains installation.
CAT IV	Measurement category IV is applicable to test and measuring circuits connected at the source of the building' s low voltage mains installation.

Symbol Instruction

Instruction of Instrument Parts



RJ45 terminal on emitter: Standard RJ45 network terminal that is used to hunt, proofread and test network cable.

Wiring indicator light: It lights up when network cable is connected, and does not flash if circuit breaks. Error indicator light will flash if error occurs.

Error indicator light: It lights up when there is error tested in network cable.

SHORT: short connection error indicator light; MISWIRE: miswire error indicator light;

REVERSED: reverse connection error indicator light;

SPLITPAIRS: splitpairs error indicator light.

TEST button: Start/stop button to start or stop the network cable test.

CONT status light: It lights up when circuit is connected. It is brighter if impedance is smaller in circuit.

Function switch: Select measurement function of the instrument.

CONT: Continuous or network cable on-line test function gears.

: Network cable function test, telephone line status test and level test function gears.

SCAN: Emitting audio function gears.

Power light: It lights up when instrument is power on and flashes when it has under voltage.

Emitter power switch: To start the instrument, press this switch. Press it again to shut down the instrument.

BNC terminal: Standard BNC terminal that is conveniently used to hunt coaxial-cable with BNC terminal.

Scanning speed or audio selection button : Press this

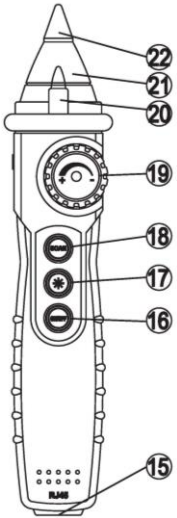
button to change scanning speed in the process of testing network cable. Press this button to change the frequency of emitted audio in the process of hunting cable.

Scanning speed or audio selection light: It lights up if it is at quick scanning or high audio frequency.

Audio output indicator light: It lights up when audio signal is output.

Telephone line status indicator light: It is a double color light. It turns red or green at different working status of telephone or shows different color when level is tested.

RJ11 terminal: An terminal used for telephone working status, level test and hunting other metal conducting wire.



RJ45 terminal on receiver: Standard RJ45 network terminal used to test network cable.

Power switch: Power is on by pressing this switch and off by popping up this switch.

Spotlight switch: Spotlight is on by pressing this switch and off by popping up this switch.

Test SCAN: Press and hold this button to test the cable.

Volume button: Adjust the volume of audio received.

Spotlight: To assist the lighting in places with insufficient light.

Battery level indicator lamp: Press the test button. The

battery level indicator lamp dims in low battery level.

Probe: It gets close to tested line during test and is used to receive audio signal.

Headset jack: Connect to headset.

Function operation

1. Cable hunting:

This function is capable of quickly finding the required line pairs among numerous ones. It is adaptable to network cable with RJ 45 terminal, telephone line with RJ11 terminal and BNC terminal line. The test of other metal lead can be made through adaptor. Methods to operate:

a) Power on the emitter, and power light is on. Emitter starts working.

b) Connect one end of tested line to the corresponding terminal of emitter (e.g. RJ45, RJ11 and BNC) or connect to RJ11 terminal through adaptor.

c) Push function selection switch of emit SCAN position, TONE indicator lights up, indicating the emitter starts to send audio signal to the line to be tested.

d) Power on the receiver, hold receiver and press "SCAN" button to test the other end of tested line (e.g. near line stacking of telephone line distribution cabinet, terminal box, hub, and exchanger). Compare the sound sent by receiver, the linr with the loudest sound close to probe will be the target.

e) Adjust the volume of receiver by pressing the volume rotary knob during test, or pres button on emitter to change audio frequency sent by emitter to adapt to real environment.

Notes: You can connect headset to the headset jack of receiver to aid test in places where there is loud noise.

2. Test network cable:

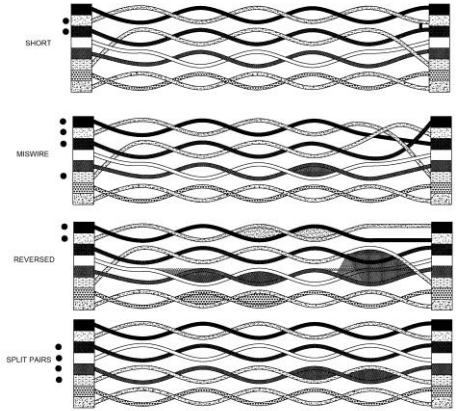
It tests physical connection status of network cable, such as open circuit, short connection, miswire, reverse connection and splitpairs.

Description of fault indication: When fault occurs in line or line pair, the corresponding line or line pair light and fault light will turn on at same time. When all line pairs are correct, line pair indicator lamp will turn on but fault light does not turn on.

- Open circuit: Some "open circuit" are not abnormal cases for some types of cable. So this instrument does not set up error indicator lamp for "open circuit". The typical cables are usually two pairs to four pairs of twisted-pairs. When no twisted-pair is connected to RJ45 socket pin, the line pair indicator light will not turn on. The user can judge which line pair indicator

lights should turn on or not according to actually connected twisted-pairs.

- Short connection: see below.
- Miswire: One end of a pair is dislocated. See below.
- Reverse connection: One end of a pair is reversely connected. See below.
- Splitpairs: One wire of a pair intertwines on the wire of another pair. See below.



Methods to operate:

a) Power on the emitter, and power light is on. Emitter starts working. Push the function switch to "☎" network cable function position (in the middle).

b) Connect one end of network cable to RJ45 socket of emitter.

c) Connect another end of network cable to RJ45 socket of receiver.

d) Press "TEST" button to start test. Results will be shown on line pair indicator light and fault indicator light.

e) The instrument will continue circulation test until press "TEST" button again. The test will end.

f) Press to change scanning speed during test.

For example: When line pair 1-2 and 3-6 are short circuited, the indicator light will show as follows:

Line pair indicator light 1-2 and 3-6 is on and short connection indicator light is on.

Notes:

After one error in line pair is tested by the instrument, it will not continue testing other errors in such line pair. So in every test, only one error can be tested for the tested line pair. Only remove the fault of tested line pair can continue testing other faults in such line pair:

If tested line is disconnected in the process of showing results, the indicator light will not turn off until the results are displayed.

3. Test line level, positive or negative polarity:

Use the emitter to test DC level, positive or negative polarity

in circuits. Methods to operate:

a) Power on the emitter, and power light is on. Emitter starts working. Push the function switch to "⛝☎" telephone line function position (in the middle).
b) Connect RJ11 crystal head terminal of adaptor to RJ11 terminal of emitter. Clamp the tested line with a red-black clip.
c) If telephone line status indicator light turns red (in the middle of button switch), the red end is positive, and the black end is negative. If it turns green, the red end is negative and black end is positive.
d) The light is brighter when level is higher. The light dims when level is lower.

4. Test the status of telephone line:

Use the emitter to test the status of telephone line working.

Methods to judge TIP or RING line:

a) Power on the emitter, and power light is on. Emitter starts working. Push the function switch to "⛝☎" telephone line function position (in the middle).
b) Connect RJ11 crystal head terminal of adaptor to RJ11 terminal of emitter. Clamp the tested line with a red-black clip.
c) If telephone line status indicator light turns red (in the middle of button switch), the red end is TIP line, and the black end is RING line. If it turns green, the red end is RING line and black end is TIP line.

Judge whether the telephone line working in idle, ringing or off-hook:

a) Power on the emitter, and power light is on. Emitter starts working. Push the function switch to "⛝☎" telephone line function position (in the middle).
b) Connect RJ11 crystal head terminal of adaptor to RJ11 terminal of emitter. Clamp the red clip to RING line and black clip to TIP line.
c) If telephone line status indicator light turns green (in the middle of button switch), the telephone line is in idle. If it does not light up, it is in off-hook. If it turns green or red at same time flashes regularly, the telephone line is in ringing.

Notes: It may affect other indicator lights when the telephone is in ringing, but which will not affect test results.

5. Check lead continuity

There are two ways to test continuity in circuits.

a) Power on the emitter, and power light is on. Emitter starts working. Push the function switch to "CONT"

position. Connect RJ11 crystal head terminal of adaptor to RJ11 terminal of emitter. Clamp the tested line with a red-black clip. If "CONT" light is on, the circuit will be continuous. The light is brighter if impendence is smaller.

b) The operation methods are similar with cable hunting function. If the audio is detected by the receiver on another outer end of circuit, the circuit will be continuous.

6. Test connection between network cable with exchanger port:

It can directly test whether network cable is connected to exchanger in no need of disconnection. Only emitter is required. Methods to operate:

a) Power on the emitter, and power light is on. Emitter starts working. Push the function switch to "CONT" position.

b) Connect RJ45 crystal head terminal of tested line to RJ45 terminal of emitter and another end to RJ45 terminal of exchanger.

c) Press "TEST" button to test. Line pair indicator light will show test results. If the tested line is connected to exchanger, the light will be on, or else, it will be off.

d) The instrument will continue circulation test until press "TEST" button again. The test will end.

e) You can press "SEL" button to change scanning speed in indicator light in the process of test.

Notes:

If tested line is disconnected in the process of showing results, the indicator light will not turn off until the results are displayed.

7. Battery undervoltage indication:

Undervoltage indication on emitter: When battery of emitter is lower than working voltage, the power light on emitter will flash. In this case, please timely replace battery.

Battery voltage indication on receiver: There is a luminous diode on receiver probe, which is dimmed when voltage is low. When the indicator light is very dimmed, set the emitter as cable hunting and working status, approach RJ45 terminal of emitter with receiver probe, and adjust the volume of receiver till maximum. If there is no sound sent by receiver, please timely replace battery.

General technical parameters

- Temperature:
  Operating:0～40^{O}C, maximal 80 % relative humidity (non-condensing) .

Storage:-10 ~ 50 ºC, maximal 80 % relative humidity (non-condensing, battery not included)

- Altitude:<2000m(meter)
- Anti-explosion rating: IP 40
- Distance of emitting signal :>3000m
- Safety class:IEC61010 -1 600V CAT III, pollution class II.
- Battery: emitter 3 x 1.5V/AA; receiver 6F22/9V
- Size: emitter 125mm x 66mm x 30mm; receiver 210mm x 45mm x 23mm
- Weight: approx. 95 g for emitter (battery not included); approx. 70 g for receiver (battery not included)

Maintenance

Do not attempt to repair or service this instrument unless you are qualified to do so and have the relevant calibration, performance test and service instructions.

Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or chemical solvents.

Replace battery

Replace the battery as follows:

1. Screw out the bolts of battery cover with screwdriver.
2. Remove battery cover and old battery.
3. Replace new battery with equivalent specification.
4. Install battery cover and tighten the back cover with screwdriver.